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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,208	11/16/2001	Jinbao Jiao	AP01979	8084
22917	7590	04/26/2004	EXAMINER	
MOTOROLA, INC. 1303 EAST ALGONQUIN ROAD IL01/3RD SCHAUMBURG, IL 60196			AFTERGUT, JEFF H	
			ART UNIT	PAPER NUMBER
			1733	

DATE MAILED: 04/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/993,208	JIAO ET AL.	
	Examiner	Art Unit	
	Jeff H. Aftergut	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7, 11, 12, 27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) 3, 11, 12, 27 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Election/Restrictions

1. Claims 3, 11, 12, 27, and 28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 3.

Applicant is advised that claim 3 has been amended in such a manner as to be equivalent to utilizing a dual cure adhesive wherein the curing mechanisms were different for the two cures (claim 12 previously non-elected and withdrawn from consideration). It should be noted that the elected invention was the use of heat as the second cure mechanism.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 2, 4, 5, and 7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 1, the applicant has amended the claim to recite that in the process one performed the step of “milling vents into the printed circuit” and that the second cure”, facilitated by the vents,” to the at least partially cured adhesive was performed with heat. Applicant is advised that the second cure elected originally was directed to the use of heat to cure the partially cured adhesive. Additionally, the claims previously presented (prior to this last amendment)

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required that the heating employed to cure the partially cured adhesive also reflow the solder for securing the components upon the board simultaneous with the final cure (second cure) of the adhesive which secured the flexible circuit to the rigidizer. The claims as amended require the milling of vents, however a reading of page 8, lines 2-17 of the original disclosure made it clear that the milled vents were only utilized to facilitate the second cure when the second cure was one of air cure or ultraviolet radiation cure. Thus, the milling of vents was performed in the embodiments where the second cure was different from the first cure as well as where the second cure was one of air cure or ultraviolet radiation cure. These embodiments (species) are non-elected. Nowhere did applicant envision that the vents which were milled in the housing were used to facilitate heating of the adhesive for the second cure. It appears that applicant is mixing up species (embodiments) and as such, the language presented relating to the milling of the vents is deemed new matter. The applicant is advised that to correct this problem, it is suggested that applicant delete the language relating to the milling of the vents as well as the language that the second cure was facilitated by the vents, as the vents were not described as being used in the embodiment (species) where the solder and second cure took place simultaneously with the application of heat from a reflow oven (note that with heat as the second cure mechanism it appears that there is no reason to provide the milling of vents as the heat will get to the adhesive whether the vents are present or not).

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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5. Claims 1, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jensen et al in view of Williams et al and any one of Derwent Abstract of South African Patent 317040, Japanese Patent 2-34987 or Leonard et al for the same reasons as presented in the Office action dated 3-3-04, further taken with any one of Fisher et al (newly cited), Meny et al (newly cited), or Cottingham et al (newly cited).

The applicant is referred to the Office action dated March 3, 2004 for a complete discussion of the combination of Jensen et al, Williams et al and any one of Derwent Abstract of South African Patent 317040, Japanese Patent 2-34987 or Leonard et al. It should be noted that Jensen clearly suggested that one skilled in the art would have joined a rigid heat sink to the backside of a flexible board which contained components on the opposite side which were attached to the circuit board with solder thereon. The assembly was not described as being bent subsequent to the formation of the assembly. However, the bending of the heat sink and the joined flexible board with the components thereon was in fact known per se in the art of manufacturing an electronic module for an automobile or other land vehicle as suggested by any one of Fisher et al, Meny et al, or Cottingham et al. the applicant is advised that had one desired to utilize the electronic assembly of Jensen et al as a completed electronic assembly that the same would require that the assembly be disposed in a housing and that typically such involved the separate attachment of the heat sink rigidizers to the housing and the proper disposal of the same within the housing. The heat sinks (rigidizers) would have been applied in a non-planar fashion to the flexible board in the prior art. As an alternative to having to perform the bonding out of planar alignment, the references to any one of Fisher et al, Meny et al, or Cottingham et al suggested that those skilled in the art would have applied the heat sink/ rigidizer against the

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backside of a printed circuit board as well as attached all of the components upon the printed circuit board, followed by bending the assembly to make the finished electronic module. Clearly, such would have avoided the extra step of mounting the rigidizer plates to the housing of the module. In the manufacture of an electronic module which included a rigidizer plate attached to a printed flexible circuit board carrying attached components on the opposite side, it would have been obvious to one of ordinary skill in the art at the time the invention was made to bend the assembly to make a completed electronic module which was easier assembled in a housing as suggested by any one of Fisher et al, Meny et al, or Cottingham et al in the process of making an electronic component as suggested by the combination of Jensen et al, Williams et al and any one of Derwent Abstract of South African Patent 317040, Japanese Patent 2-34987 or Leonard et al.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 5 further taken with any one of Blucm et al, Masayuki et al or Banovetz et al for the same reasons as set forth in paragraph 4 of the Office action dated March 3, 2004.

7. Claims 1, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 5 further taken with Chipbonding Adhesive ort Dual Cure System Adhesives for the same reasons as presented in paragraph 5 of the Office action dated March 3, 2004.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 7 further taken with McIver for the same reasons as presented in the Office action dated March 3, 2004, paragraph 6.

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9. Applicant's arguments with respect to claims 1, 2, 4, 5, and 7 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that the prior art of record failed to teach the milling of vents which facilitated the second cure of the adhesive employed in the operation of making the assembly. As noted above, the operation of forming the vents was only described for use with the embodiments of the second cure which were curing via air or ultraviolet as the vents were needed to ensure that air or ultraviolet exposure for the resin was achieved. In the embodiment where the second cure was performed via heat (i.e. during the reflowing of the solder to join the electrical components to the board the resin was also cured (the second cure)), there were no vents as having been described as used in the operation and the vents were not necessary as adequate heat in the reflow oven took place to cure the resin material. Thus, applicant appears to be mixing up embodiments which not only introduces new matter which was not in applicant's possession at the time the invention was made (i.e. the use of both vents and heat for the second cure), but it also throws into doubt as to whether claim 1 is still claiming the elected invention. As presented in this amendment, it is assumed (because the second cure is still via heat) that claim 1 is describing the embodiment where heat was used to cure the adhesive and thus still is the elected species of invention. The amendment of claim 3, however, clearly relates to a non-elected species as applicant's themselves point to claim 12 (withdrawn) for support to claim this subject matter. Claim 3 has therefore likewise been withdrawn from consideration as being directed to a non-elected species without traverse.

While it is correct that no prior art of record taught the vent openings which were milled into the assembly, the prior art need not teach this feature as: (1) such is not supported for use

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with the claimed species, and; (2) the milling of vents would not facilitate the heating of the adhesive in the assembly of the prior art (as it does not facilitate the heating of the adhesive in applicant's disclosed invention). The applicant is advised that the prior art rejection has been retained, in effect, because it is assumed that applicant will respond by deleting the language relating to the milling of the vents as such was not part of the elected species.

As to the use of bending for the assembly after formation, the other amendment introduced into claim 1, those skilled in the art at the time the invention was made would have known to bend the assembly after all parts were joined together in order to facilitate the formation of a housing for the assembly as suggested by any one of Fisher et al, Meny et al, or Cottingham et al. clearly, one skilled in the art, as a function of the type of product being manufactured, would have understood what processing was necessary to provide an electronic module for a vehicle from the assembly of Jensen and such clearly would have included the bending of the assembly as suggested by any one of Fisher et al, Meny et al, or Cottingham et al after the assembly of the heat sink to the backside of the flexible board as well as the assembly of the components on the opposite side of the board.

No claims are allowed.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**


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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
April 21, 2004